

Textural Beaver Repellent for Tree Protection – Toxicity Research Update

Purpose

The purpose of this research was to evaluate the efficacy of a textural repellent (sand and paint mixture) on tree damage caused by beaver and beaver tree felling in Fish Creek Provincial Park. The use of a textural repellent is a management technique that would enable coexistence in a situation where beaver may be otherwise lethally removed.

Upon further review of the ingredients in the paint used, along with all other adhesives that are available, we deemed the risk of toxic effects to beavers was too high to recommend this technique as a management technique even though it is used in other jurisdictions.

Toxicology Calculations

The following assumptions were made for the toxicology calculations:

- No data is available on the toxicity of titanium dioxide to beavers so rat research was used (please see Appendix 2 for the Safety Data Sheet (SDS) for No.4050 Ultra Pure White® and No. 4400 Medium Base)
- Weight of a small adult beaver = 12kg
- Lethal Dose, 50% (LD50) for titanium dioxide for a rat = >5000mg/kg (please see Appendix 2 for the Safety Data Sheet (SDS) for No.4050 Ultra Pure White® and No. 4400 Medium Base)
- Paint (Behr® Premium Plus® Exterior Flat, 100% Acrylic, No.4050 Ultra Pure White®/No. 4400 Medium Base/No.4300 Deep Base) concentration of titanium dioxide ranged from 10-30% so we assumed the highest concentration = 30%. Please note there are three different paint bases which would be used depending on the colour selected to match the trees, therefore it is unknown which base would be used. Please see Appendix 2 for the safety data sheets for all three bases.
- Painted trees were relatively small in diameter, ranging from an estimated 5 cm – 25 cm



(Beaver weight) x (LD50 Titanium dioxide for a rat) x (weight conversion from milligrams to grams) x (% of titanium dioxide by weight) x (weight conversion from grams to pounds) x (density of paint (as per No. of paint base)) x (volume conversion) = amount of paint needed to be consumed to reach LD50 toxicity level for Titanium dioxide in a beaver

Titanium Dioxide Calculation

NO.4050 ULTRA PURE WHITE®

$12 \text{ kg} \times (5000\text{mg}/\text{kg}) \times (1\text{g}/1000\text{mg}) \times (1/0.3) \times (2.2\text{lbs}/1000\text{g}) \times (1 \text{ gal}/11.17\text{lbs}) \times (3785 \text{ ml}/1\text{gal}) = 149.09 \text{ ml}$ of paint needs to be consumed to reach LD50 toxicity for a beaver

NO. 4400 MEDIUM BASE

$12 \text{ kg} \times (5000\text{mg}/\text{kg}) \times (1\text{g}/1000\text{mg}) \times (1/0.3) \times (2.2\text{lbs}/1000\text{g}) \times (1 \text{ gal}/11.05\text{lbs}) \times (3785 \text{ ml}/1\text{gal}) = 150.71 \text{ ml}$ of paint needs to be consumed to reach LD50 toxicity for a beaver

NO.4300 DEEP BASE

$12 \text{ kg} \times (5000\text{mg}/\text{kg}) \times (1\text{g}/1000\text{mg}) \times (1/0.3) \times (2.2\text{lbs}/1000\text{g}) \times (1 \text{ gal}/10.95\text{lbs}) \times (3785 \text{ ml}/1\text{gal}) = 152.09 \text{ ml}$ of paint needs to be consumed to reach LD50 toxicity for a beaver

Tree Calculation

During our pilot research of the textural repellent technique, it took 2 gallons of paint to apply the mixture to 167 trees. To convert the amount of paint to the number of trees required to be consumed to reach LD50 for beaver for titanium dioxide we used the following formula:

(Number of trees per gallon) / (number of lethal doses in one gallon of paint) = number of trees required to be consumed to reach the LD50 for beaver for titanium dioxide

NO.4050 ULTRA PURE WHITE®

$(167\text{trees}/2 \text{ gallons of paint}) / (3785\text{ml}/149.09\text{ml}) = 83.5/24.9 = \mathbf{3.29 \text{ trees}}$

NO. 4400 MEDIUM BASE

$(167\text{trees}/2 \text{ gallons of paint}) / (3785\text{ml}/150.71\text{ml}) = 83.5/24.9 = \mathbf{3.32 \text{ trees}}$

NO.4300 DEEP BASE

$(167\text{trees}/2 \text{ gallons of paint}) / (3785\text{ml}/152.09\text{ml}) = 83.5/24.9 = \mathbf{3.36 \text{ trees}}$

Based on this review, beavers need to consume the bark of just over 3 painted trees to reach the lethal dose (LD50) of titanium dioxide.

Additional Toxicology Information

The ecotoxicity for all three bases states that the paint is “harmful to aquatic life with long lasting effects.” Additionally, it is difficult to estimate the amount of each ingredient including titanium dioxide as this information is considered a trade secret so exact amounts are not included in the SDS sheets. Some ingredients are not listed as they are below disclosure limits.

Alternative Adhesives

We conducted a thorough review of available adhesives including indoor, outdoor, hobby, and child-safe paints; glues; and raw egg.

The criteria required of an adhesive for this technique includes:

- Ability to withstand weather (i.e., not water-soluble)
- Does not attract wildlife
- Secures sand to the trunk of the tree
- Does not contain titanium dioxide or other toxic ingredients.
- Lists all ingredients

We found no products that meet all these criteria currently exist.

Conclusion

The use of a textural repellent is a management technique that would enable coexistence in a situation where beaver may be otherwise lethally removed. The goal of the textural repellent is to deter beavers from cutting down trees,

however there is a risk that the beaver may test the painted trees and consume the painted bark in amounts that may be lethal, based on our calculations. Our research shows that a beaver consuming the bark of 3 painted trees would reach a lethal dose (LD50) of titanium dioxide. Given the small number of painted trees needed to be consumed to reach LD50, along with the lack of safe alternative adhesives ***we conclude that the use of a sand/paint textural repellent as a technique to protect trees cannot be recommended.***

Textural Beaver Repellent for Tree Protection

Purpose

Coexisting with beavers has been identified as a management option in the Fish Creek Provincial Park Beaver Management Plan. Within Fish Creek Provincial Park there is a current need for tree protection from beavers. There is a moderate to low tolerance level for tree damage/felling in parts of this urban and highly visited provincial park.

The purpose of this research is to evaluate the efficacy of a textural repellent (sand and paint mixture) on tree damage caused by beaver and beaver tree felling in Fish Creek Provincial Park.

Overview

The Miistakis Institute and Cows and Fish have an ongoing project, *Putting Beavers to Work for Watershed Resiliency and Restoration*, that aims to foster coexistence with beavers so that watershed benefits afforded by beavers can be realized. As part of this project, we research the use of coexistence tools and host skills development workshops on how to install and use these tools.

The use of a textural repellent protects trees from beavers as beavers avoid trees with the repellent due to the combination of taste/texture of the repellent. The repellent is comprised of a sand and paint mixture that is visually discrete. This method has anecdotal evidence from other projects of successfully repelling beavers from damaging and felling trees.

The collaborative has produced a short video on the use of this textural beaver repellent technique in hopes that it can be applied and researched at other beaver conflict sites (<https://youtu.be/iXc8cCFZqUw>).



Research Area

Marshall Springs

Textural repellent application date: August 6, 2020

Location: Marshall Springs – Fish Creek Provincial Park

Dominant tree species: Aspen

Votiers Flats

Textural repellent application date: September 28, 2020

Location: Votiers Flats – Fish Creek Provincial Park

Dominant tree species: Aspen with willow mix

Research Methods

Ecology staff responsible for Fish Creek Provincial Park were consulted to select trees to be painted (trees requiring protection from current beaver activity in the area). Some tree take is tolerable at the site therefore a selection of trees remained unpainted and were used as control plots and for providing food/building materials for the beavers.

A grid pattern of four 10m by 10m cells were used for the research area as seen in Figure 1.

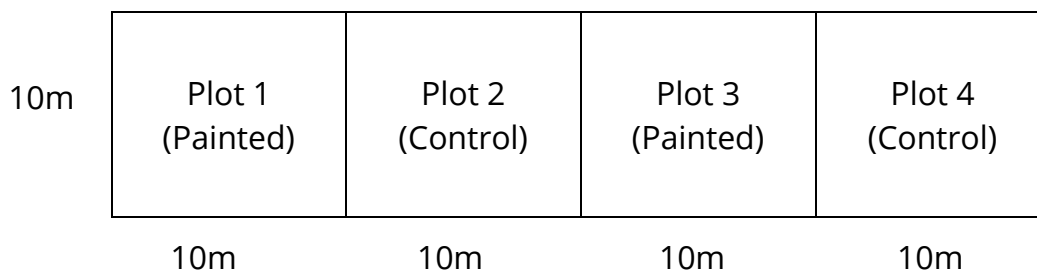


Figure 1: Marshall Springs Study area grid system

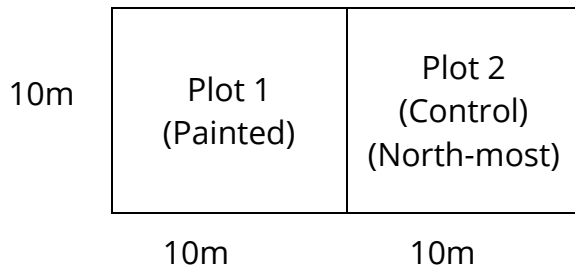


Figure 2: Votiers Flats study area grid system

On the day of installation, baseline data of the number of trees was collected in each plot using four different damage categories: Sapling under 6' tall, no damage, some damage, stump. Photos were taken of each of the plots.

The textural repellent was applied to both living and dead trees (only a handful of dead trees were present within the plots) in two categories: no damage, and some damage. It was applied from the base of the tree to 4' up the trunk. Saplings less than 6' tall were not painted.

Sand/paint Mixture: approximately 140gm sand per liter of paint (20oz sand per gallon of paint) was applied at the Marshall Springs site. At Votiers Flats site we applied 80oz of sand per gallon of paint.

1. Paint: 100% Acrylic latex paint (exterior), tinted to match colour of tree trunk (Behr® Premium Plus Exterior Paint and Primer in One, exterior flat). Please see 'Home Depot Chemical Strategy' and SDS sheets for details on toxicity. The base colour was selected based on the best match to tree colour, then tinted to match more closely.
2. Play sand (Quickrete Playsand). Please see SDS document for details on toxicity

A follow-up monitoring site visit was conducted in December 2020 where trees were recounted in all plots.

Results

The pilot site at Votiers flats was untouched by beaver in both the control and painted plots. We believe the beaver(s) moved their harvesting activities to a different area therefore this site is excluded from results as no comparison can be made.

At the Marshall Spring Pilot site (Figure 3), the change in the number of stumps before and after treatment was analyzed. The number of stumps increased in all plots, however, plots that remained unpainted (control) experienced an 88.5% increase in the number of stumps and plots that were treated with the textural repellent (sand/paint mixture) experienced a 15.5% increase in number of stumps (Table 1). There were very few trees in the 'some damage' category therefore only the 'stump' category was used for analysis.

Table 1: Marshall Springs Pilot Plot Results

Site ID (treatment type)	Change in number of stumps (increase)	Percent Change (percent increase)	Average percent change (percent increase) by treatment type
Plot 1 (Painted)	6	9%	15.5%
Plot 3 (Painted)	10	22%	
Plot 2 (Control)	24	77%	88.5%
Plot 4 (Control)	62	100%	



Figure 3: Marshall Springs site- from Pathway, looking eastward from Plot 4 (foreground) to Plot 1 (background)

Due to the small sample size ($n=2$) we could not run a statistical test to determine if there was a statistical difference between the treatment and control plots. Instead, we used an R-script to create a box plot of the change in the number of stumps for the research plots (Figure 4). Assumptions to developing box plot: plots are the same size; and plots have similar number of trees for beavers to fell.

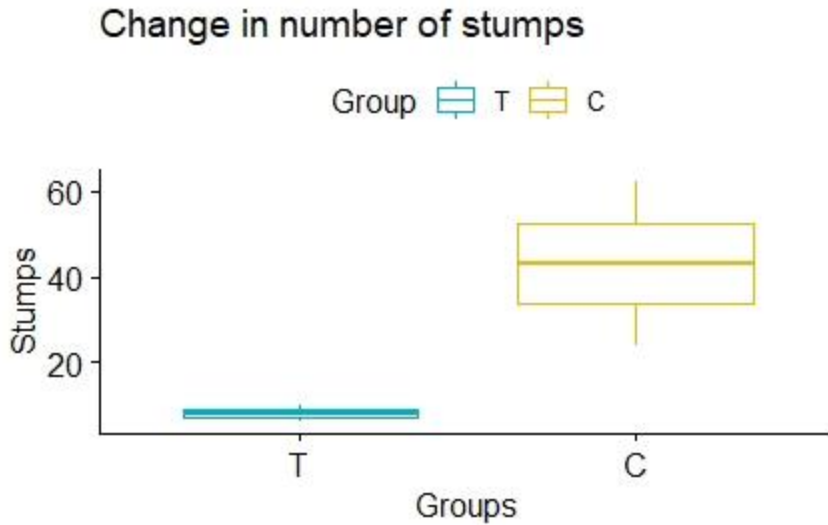


Figure 4: Marshall Springs boxplot of means and stand deviation for treatment (T) and control (C) groups

The boxplot shows that we have strong indication that the treatment was effective for this study in Fish Creek Provincial Park.

Potential sources of error in this pilot include snow conditions limiting visibility of stumps and human error while counting. We also did not test in areas where forage for beavers is limited.

Conclusion

This pilot project indicates that the sand and paint textural repellent treatment was effective for this study in Fish Creek Provincial Park. These results support the need for more in-depth study. The R-script can later be expanded to include more sample plots and statistical tests should more plots be added in the future.

Additionally, further research should be conducted in areas with different amounts of available forage, and in different climates. A long-term study could evaluate how often the textural repellent needs to be applied in a specific climate. Different ratios of sand to paint could also impact results. Research into the toxicity of paint to beavers should also be conducted as it was out of scope for this pilot project.

It is important to note that the application of this tool is most effective for areas where some level of tree take by beavers is acceptable.

Supporters

Putting Beavers to Work for Watershed Resiliency and Restoration would not be possible without the generous support of the Alberta Environment and Parks' Watershed Resiliency and Restoration Program (WRRP), and The Calgary Foundation.

Appendix 1: Plot Data

Table 2: Marshall Springs Pilot Plot

	Damage Category	Number of Trees - Baseline	Number of Trees - Monitoring Visit
Plot 1 (Painted)	Sapling under 6' tall	37	34
	No damage	57	54
	Some damage	0	0
	Stump	67	73
Plot 2 (Control)	Sapling under 6' tall	14	13
	No damage	42	20
	Some damage	1	0
	Stump	31	55
Plot 3 (Painted)	Sapling under 6' tall	26	16
	No damage	41	39
	Some damage	1	1
	Stump	46	56
Plot 4 (Control)	Sapling under 6' tall	6	1
	No damage	27	1
	Some damage	0	1
	Stump	31	62

Table 3: Votiers Flats Pilot Plot

	Damage Category	Number of Trees - Baseline	Number of Trees - Monitoring Visit
Plot 1 (Painted)	Sapling under 6' tall	1	NA
	No damage	67	NA
	Some damage	1	NA
	Stump	0	0
	Unpainted/flagged (Ran out of paint so left unpainted-removed from analysis)	9	NA
Plot 2 (Control)	Sapling under 6' tall	10	NA
	No damage	63	NA

(Northern-most)*	Some damage	1	NA
	Stump	1	1

* Plot had a lot of clumped trees, if they came from the same trunk we counted as one tree

* we did not include bushes/shrubs in the counts or painting

Appendix 2: Paint Safety Data Sheets

Safety Data Sheets for Behr® Premium Plus® Exterior Flat, 100% Acrylic, No.4050 Ultra Pure White®, No. 4400 Medium Base, and No.4300 Deep Base

1. Identification

Product identifier	BEHR® PREMIUM PLUS Exterior Flat Paint & Primer In One - Ultra Pure White	
Other means of identification		
Product number	4050	
Recommended use	Architectural Coating	
Recommended restrictions	None known.	
Manufacturer/Importer/Supplier/Distributor information		
Supplier	Behr Process Canada, Ltd. 2750 Centre Avenue N.E. Calgary, AB T2A 2L3	
Emergency telephone	(US)+1 760 476 3962 (US)+1 866 519 4752	
Access code	335213	

2. Hazard identification

Physical hazards	Not classified.	
Health hazards	Carcinogenicity	Category 2
Label elements		



Signal word	Warning	
Hazard statement	Suspected of causing cancer.	
Precautionary statement		
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection.	
Response	IF exposed or concerned: Get medical advice/attention.	
Storage	Store locked up.	
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.	
Other hazards	None known.	
Supplemental information	None.	

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Titanium dioxide		13463-67-7	10 - 30
Cristobalite		14464-46-1	1 - 5
Diatomaceous Earth (Flux calcined)		68855-54-9	0.1 - 1
Diuron		330-54-1	0.1 - 1

Composition comments	All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume. The exact concentrations of the above listed chemicals are being withheld as a trade secret.
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4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Wash off with soap and water. Get medical attention if irritation develops and persists.
Eye contact	Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Direct contact with eyes may cause temporary irritation.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	IF exposed or concerned: Get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO ₂).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	<p>Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.</p> <p>Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.</p> <p>Never return spills to original containers for re-use. Put material in suitable, covered, labeled containers. For waste disposal, see section 13 of the SDS.</p>
Environmental precautions	Avoid discharge into drains, water courses or onto the ground. Avoid release to the environment.

7. Handling and storage

Precautions for safe handling	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid prolonged exposure. Should be handled in closed systems, if possible. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store locked up. Store in tightly closed container. Store away from incompatible materials (see section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Aluminium hydroxide (CAS 21645-51-2)	TWA	1 mg/m ³	Respirable fraction.
Ammonium hydroxide (CAS 1336-21-6)	STEL	35 ppm	

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
	TWA	25 ppm	
Cristobalite (CAS 14464-46-1)	TWA	0.025 mg/m3	Respirable fraction.
Diuron (CAS 330-54-1)	TWA	10 mg/m3	
Titanium dioxide (CAS 13463-67-7)	TWA	10 mg/m3	

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value	Form
Cristobalite (CAS 14464-46-1)	TWA	0.025 mg/m3	Respirable.
		0.025 mg/m3	Respirable particles.
Diuron (CAS 330-54-1)	TWA	10 mg/m3	
Titanium dioxide (CAS 13463-67-7)	TWA	10 mg/m3	

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value	Form
Aluminium hydroxide (CAS 21645-51-2)	TWA	1 mg/m3	Respirable.
Ammonium hydroxide (CAS 1336-21-6)	STEL	35 ppm	
	TWA	25 ppm	
Cristobalite (CAS 14464-46-1)	TWA	0.025 mg/m3	Respirable fraction.
Diuron (CAS 330-54-1)	TWA	10 mg/m3	
Silicon dioxide, crystalline silica-free (CAS 7631-86-9)	TWA	4 mg/m3	Total
		1.5 mg/m3	Respirable.
Titanium dioxide (CAS 13463-67-7)	TWA	3 mg/m3	Respirable fraction.
		10 mg/m3	Total dust.

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

Components	Type	Value	Form
Aluminium hydroxide (CAS 21645-51-2)	TWA	1 mg/m3	Respirable fraction.
Ammonium hydroxide (CAS 1336-21-6)	STEL	35 ppm	
	TWA	25 ppm	
Cristobalite (CAS 14464-46-1)	TWA	0.025 mg/m3	Respirable fraction.
Diuron (CAS 330-54-1)	TWA	10 mg/m3	
Titanium dioxide (CAS 13463-67-7)	TWA	10 mg/m3	

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value	Form
Aluminium hydroxide (CAS 21645-51-2)	TWA	1 mg/m3	Respirable fraction.
Alumino silicate, particulate (CAS 37244-96-5)	TWA	10 mg/m3	Total dust.

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value	Form
Ammonium hydroxide (CAS 1336-21-6)	STEL	35 ppm	
	TWA	25 ppm	
Cristobalite (CAS 14464-46-1)	TWA	0.05 mg/m3	Respirable fraction.
Diuron (CAS 330-54-1)	TWA	10 mg/m3	
Titanium dioxide (CAS 13463-67-7)	TWA	10 mg/m3	

Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety)

Components	Type	Value	Form
Cristobalite (CAS 14464-46-1)	TWA	0.05 mg/m3	Respirable dust.
Diuron (CAS 330-54-1)	TWA	10 mg/m3	
Silicon dioxide, crystalline silica-free (CAS 7631-86-9)	TWA	6 mg/m3	Respirable dust.
Titanium dioxide (CAS 13463-67-7)	TWA	10 mg/m3	Total dust.

Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21)

Components	Type	Value	Form
Aluminium hydroxide (CAS 21645-51-2)	15 minute	20 mg/m3	Dust.
	8 hour	10 mg/m3	Dust.
Cristobalite (CAS 14464-46-1)	15 minute	10 mg/m3	Inhalable fraction.
	8 hour	0.05 mg/m3	Respirable fraction.
Diuron (CAS 330-54-1)	15 minute	20 mg/m3	
	8 hour	10 mg/m3	
Titanium dioxide (CAS 13463-67-7)	15 minute	20 mg/m3	
	8 hour	10 mg/m3	

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment**Eye/face protection**

Wear safety glasses with side shields (or goggles).

Skin protection**Hand protection**

Wear appropriate chemical resistant gloves.

Other

Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

Respiratory protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Observe any medical surveillance requirements. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties**Appearance****Physical state**

Liquid.

Form	Liquid.
Colour	White.
Odour	Slight.
Odour threshold	Not available.
pH	7 - 10
Melting point/freezing point	Not available.
Initial boiling point and boiling range	> 37.2 °C (> 99 °F)
Flash point	Not applicable.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Vapour pressure	Not available.
Vapour density	Not available.
Relative density	1.34
Solubility(ies)	
Solubility (water)	Soluble
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	50 - 140 KU at 25°C
Other information	
Density	11.17 lbs/gal
Explosive properties	Not explosive.
Oxidising properties	Not oxidising.
VOC	11 g/l (including water) (Material) 27 g/l (excluding water) (Coating)

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Strong oxidising agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Prolonged inhalation may be harmful.
Skin contact	Prolonged skin contact may cause temporary irritation.
Eye contact	Direct contact with eyes may cause temporary irritation.
Ingestion	Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics Direct contact with eyes may cause temporary irritation.

Information on toxicological effects

Acute toxicity

Components	Species	Test Results
Titanium dioxide (CAS 13463-67-7)		
Acute		
Inhalation		
LC50	Rat	3.43 mg/l, 4 Hours
Oral		
LD50	Rat	> 5000 mg/kg
Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.	
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.	
Respiratory or skin sensitisation		
Canada - Alberta OELs: Irritant		
Cristobalite (CAS 14464-46-1)		Irritant
Diuron (CAS 330-54-1)		Irritant
Titanium dioxide (CAS 13463-67-7)		Irritant
Respiratory sensitisation	Not a respiratory sensitiser.	
Skin sensitisation	This product is not expected to cause skin sensitisation.	
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.	
Carcinogenicity	Suspected of causing cancer.	
ACGIH Carcinogens		
Cristobalite (CAS 14464-46-1)		A2 Suspected human carcinogen.
Diuron (CAS 330-54-1)		A4 Not classifiable as a human carcinogen.
Titanium dioxide (CAS 13463-67-7)		A4 Not classifiable as a human carcinogen.
Canada - Alberta OELs: Carcinogen category		
Cristobalite (CAS 14464-46-1)		Suspected human carcinogen.
Canada - Manitoba OELs: carcinogenicity		
Cristobalite (CAS 14464-46-1)		Suspected human carcinogen.
Diuron (CAS 330-54-1)		Not classifiable as a human carcinogen.
Titanium dioxide (CAS 13463-67-7)		Not classifiable as a human carcinogen.
Canada - Quebec OELs: Carcinogen category		
Cristobalite (CAS 14464-46-1)		Detected carcinogenic effect in animals.
IARC Monographs. Overall Evaluation of Carcinogenicity		
Cristobalite (CAS 14464-46-1)		1 Carcinogenic to humans.
Titanium dioxide (CAS 13463-67-7)		2B Possibly carcinogenic to humans.
US. National Toxicology Program (NTP) Report on Carcinogens		
Cristobalite (CAS 14464-46-1)		Known To Be Human Carcinogen. Reasonably Anticipated to be a Human Carcinogen.
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.	
Specific target organ toxicity - single exposure	Not classified.	
Specific target organ toxicity - repeated exposure	Not classified.	
Aspiration hazard	Not an aspiration hazard.	
Chronic effects	Prolonged inhalation may be harmful.	
12. Ecological information		
Ecotoxicity	Harmful to aquatic life with long lasting effects.	
Persistence and degradability	No data is available on the degradability of any ingredients in the mixture.	
Bioaccumulative potential		
Partition coefficient n-octanol / water (log Kow)		
Diuron (CAS 330-54-1)		2.68
Mobility in soil	No data available.	

Other adverse effects The product contains volatile organic compounds which have a photochemical ozone creation potential.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

TDG

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information

Canadian regulations This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

Controlled Drugs and Substances Act

Not regulated.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Precursor Control Regulations

Not regulated.

International regulations

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto Protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Not applicable.

16. Other information

Issue date 05-February-2020

Revision date -

Version No. 01

List of abbreviations

IATA: International Air Transport Association.
IBC Code: International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk.
IMDG Code: International Maritime Dangerous Goods Code.
LC50: Lethal Concentration, 50%.
LD50: Lethal Dose, 50%.
MARPOL: International Convention for the Prevention of Pollution from Ships.
STEL: Short-Term Exposure Limit.
TDG: Transportation of Dangerous Goods.
TWA: Time Weighted Average Value.

References

HSDB® - Hazardous Substances Data Bank

Disclaimer

Behr Process Corp cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.



SAFETY DATA SHEET

1. Identification

Product identifier	BEHR® PREMIUM PLUS Exterior Flat Paint & Primer - Medium Base
Other means of identification	
Product number	4400
Recommended use	Architectural Coating
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
Supplier	Behr Process Canada, Ltd. 2750 Centre Avenue N.E. Calgary, AB T2A 2L3
Emergency telephone	(US)+1 760 476 3962 (US)+1 866 519 4752
Access code	335213

2. Hazard identification

Physical hazards	Not classified.
Health hazards	Not classified.
Label elements	
Hazard symbol	None.
Signal word	None.
Hazard statement	The mixture does not meet the criteria for classification.
Precautionary statement	
Prevention	Observe good industrial hygiene practices.
Response	Wash hands after handling.
Storage	Store away from incompatible materials.
Disposal	Dispose of waste and residues in accordance with local authority requirements.
Other hazards	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Titanium dioxide		13463-67-7	10 - 30
Cristobalite		14464-46-1	0.1 - 1
Diatomaceous Earth (Flux calcined)		68855-54-9	0.1 - 1

Composition comments	All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume. The exact concentrations of the above listed chemicals are being withheld as a trade secret.
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4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Wash off with soap and water. Get medical attention if irritation develops and persists.
Eye contact	Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed

Direct contact with eyes may cause temporary irritation.

Indication of immediate medical attention and special treatment needed

Treat symptomatically.

General information

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media

Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media

Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical

During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions

Move containers from fire area if you can do so without risk.

Specific methods

Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards

No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Keep unnecessary personnel away. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store in tightly closed container. Store away from incompatible materials (see section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Cristobalite (CAS 14464-46-1)	TWA	0.025 mg/m3	Respirable fraction.
Titanium dioxide (CAS 13463-67-7)	TWA	10 mg/m3	

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value	Form
Cristobalite (CAS 14464-46-1)	TWA	0.025 mg/m3	Respirable particles.
		0.025 mg/m3	Respirable.
Titanium dioxide (CAS 13463-67-7)	TWA	10 mg/m3	

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value	Form
Cristobalite (CAS 14464-46-1)	TWA	0.025 mg/m3	Respirable fraction.
Silicon dioxide, crystalline silica-free (CAS 7631-86-9)	TWA	4 mg/m3	Total
		1.5 mg/m3	Respirable.
Titanium dioxide (CAS 13463-67-7)	TWA	3 mg/m3	Respirable fraction.
		10 mg/m3	Total dust.

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

Components	Type	Value	Form
Cristobalite (CAS 14464-46-1)	TWA	0.025 mg/m3	Respirable fraction.
Titanium dioxide (CAS 13463-67-7)	TWA	10 mg/m3	

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value	Form
Alumino silicate, particulate (CAS 37244-96-5)	TWA	10 mg/m3	Total dust.
Cristobalite (CAS 14464-46-1)	TWA	0.05 mg/m3	Respirable fraction.
Titanium dioxide (CAS 13463-67-7)	TWA	10 mg/m3	

Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety)

Components	Type	Value	Form
Cristobalite (CAS 14464-46-1)	TWA	0.05 mg/m3	Respirable dust.
Silicon dioxide, crystalline silica-free (CAS 7631-86-9)	TWA	6 mg/m3	Respirable dust.
Titanium dioxide (CAS 13463-67-7)	TWA	10 mg/m3	Total dust.

Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21)

Components	Type	Value	Form
Cristobalite (CAS 14464-46-1)	15 minute	10 mg/m3	Inhalable fraction.
	8 hour	0.05 mg/m3	Respirable fraction.
Titanium dioxide (CAS 13463-67-7)	15 minute	20 mg/m3	
	8 hour	10 mg/m3	

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection

Wear appropriate chemical resistant gloves.

Other

Wear suitable protective clothing.

Respiratory protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state	Liquid.
Form	Liquid.
Colour	White.
Odour	Slight.
Odour threshold	Not available.
pH	7 - 10
Melting point/freezing point	Not available.
Initial boiling point and boiling range	> 37.2 °C (> 99 °F)
Flash point	Not applicable.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Vapour pressure	Not available.
Vapour density	Not available.
Relative density	1.33
Solubility(ies)	
Solubility (water)	Soluble
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	50 - 140 KU at 25°C
Other information	
Density	11.05 lbs/gal
Explosive properties	Not explosive.
Oxidising properties	Not oxidising.
VOC	10 g/l (including water) (Material) 25 g/l (excluding water) (Coating)

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Strong oxidising agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Prolonged inhalation may be harmful.
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Skin contact	Prolonged skin contact may cause temporary irritation.
Eye contact	Direct contact with eyes may cause temporary irritation.
Ingestion	Expected to be a low ingestion hazard.
Symptoms related to the physical, chemical and toxicological characteristics	Direct contact with eyes may cause temporary irritation.

Information on toxicological effects

Acute toxicity

Components	Species	Test Results
Titanium dioxide (CAS 13463-67-7)		
Acute		
Inhalation		
LC50	Rat	3.43 mg/l, 4 Hours
Oral		
LD50	Rat	> 5000 mg/kg

Skin corrosion/irritation Prolonged skin contact may cause temporary irritation.

Serious eye damage/eye irritation Direct contact with eyes may cause temporary irritation.

Respiratory or skin sensitisation

Canada - Alberta OELs: Irritant

Cristobalite (CAS 14464-46-1)	Irritant
Titanium dioxide (CAS 13463-67-7)	Irritant

Respiratory sensitisation Not a respiratory sensitiser.

Skin sensitisation This product is not expected to cause skin sensitisation.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity Due to the form of the product, exposure to the potentially carcinogenic components is not expected.

ACGIH Carcinogens

Cristobalite (CAS 14464-46-1)	A2 Suspected human carcinogen.
Titanium dioxide (CAS 13463-67-7)	A4 Not classifiable as a human carcinogen.

Canada - Alberta OELs: Carcinogen category

Cristobalite (CAS 14464-46-1)	Suspected human carcinogen.
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Canada - Manitoba OELs: carcinogenicity

Cristobalite (CAS 14464-46-1)	Suspected human carcinogen.
Titanium dioxide (CAS 13463-67-7)	Not classifiable as a human carcinogen.

Canada - Quebec OELs: Carcinogen category

Cristobalite (CAS 14464-46-1)	Detected carcinogenic effect in animals.
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IARC Monographs. Overall Evaluation of Carcinogenicity

Cristobalite (CAS 14464-46-1)	1 Carcinogenic to humans.
Titanium dioxide (CAS 13463-67-7)	2B Possibly carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens

Cristobalite (CAS 14464-46-1)	Known To Be Human Carcinogen. Reasonably Anticipated to be a Human Carcinogen.
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Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not an aspiration hazard.

Chronic effects Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity Harmful to aquatic life with long lasting effects.

Persistence and degradability No data is available on the degradability of any ingredients in the mixture.

Bioaccumulative potential	No data available.
Mobility in soil	No data available.
Other adverse effects	The product contains volatile organic compounds which have a photochemical ozone creation potential.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

TDG

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information

Canadian regulations This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

Controlled Drugs and Substances Act

Not regulated.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Ontario. Toxic Substances. Toxic Reduction Act, 2009. Regulation 455/09 (July 1, 2011)

Zinc oxide (CAS 1314-13-2)

Precursor Control Regulations

Not regulated.

International regulations

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto Protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Not applicable.

16. Other information

Issue date	05-February-2020
Revision date	-
Version No.	01

List of abbreviations

IATA: International Air Transport Association.
IBC Code: International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk.
IMDG Code: International Maritime Dangerous Goods Code.
LC50: Lethal Concentration, 50%.
LD50: Lethal Dose, 50%.
MARPOL: International Convention for the Prevention of Pollution from Ships.
TDG: Transportation of Dangerous Goods.
TWA: Time Weighted Average Value.

References

HSDB® - Hazardous Substances Data Bank

Disclaimer

Behr Process Corp cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.



SAFETY DATA SHEET

1. Identification

Product identifier	BEHR® PREMIUM PLUS Exterior Flat Paint & Primer In One - Deep Base
Other means of identification	
Product number	4300
Recommended use	Architectural Coating
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
Supplier	Behr Process Canada, Ltd. 2750 Centre Avenue N.E. Calgary, AB T2A 2L3
Emergency telephone	(US)+1 760 476 3962 (US)+1 866 519 4752
Access code	335213

2. Hazard identification

Physical hazards	Not classified.
Health hazards	Not classified.
Label elements	
Hazard symbol	None.
Signal word	None.
Hazard statement	The mixture does not meet the criteria for classification.
Precautionary statement	
Prevention	Observe good industrial hygiene practices.
Response	Wash hands after handling.
Storage	Store away from incompatible materials.
Disposal	Dispose of waste and residues in accordance with local authority requirements.
Other hazards	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

The components are not hazardous or are below required disclosure limits.

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Wash off with soap and water. Get medical attention if irritation develops and persists.
Eye contact	Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Direct contact with eyes may cause temporary irritation.
Indication of immediate medical attention and special treatment needed	Treat symptomatically.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO ₂).
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Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	<p>Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.</p> <p>Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.</p> <p>Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.</p>
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store in tightly closed container. Store away from incompatible materials (see section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits	No exposure limits noted for ingredient(s).
Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.
Individual protection measures, such as personal protective equipment	
Eye/face protection	Wear safety glasses with side shields (or goggles).
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves.
Other	Wear suitable protective clothing.
Respiratory protection	When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	
Physical state	Liquid.
Form	Liquid.
Colour	Opaque. White.
Odour	Slight.
Odour threshold	Not available.

pH	7 - 10
Melting point/freezing point	Not available.
Initial boiling point and boiling range	> 37.2 °C (> 99 °F)
Flash point	Not applicable.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Vapour pressure	Not available.
Vapour density	Not available.
Relative density	1.31
Solubility(ies)	
Solubility (water)	Soluble
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	50 - 140 KU at 25°C
Other information	
Density	10.95 lbs/gal
Explosive properties	Not explosive.
Oxidising properties	Not oxidising.
VOC	12 g/l (including water) (Material) 27 g/l (excluding water) (Coating)

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Strong oxidising agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Prolonged inhalation may be harmful.
Skin contact	Prolonged skin contact may cause temporary irritation.
Eye contact	Direct contact with eyes may cause temporary irritation.
Ingestion	Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics Direct contact with eyes may cause temporary irritation.

Information on toxicological effects

Acute toxicity	Not expected to be acutely toxic.
Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.

Respiratory or skin sensitisation

Respiratory sensitisation Not a respiratory sensitiser.

Skin sensitisation This product is not expected to cause skin sensitisation.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity Not classifiable as to carcinogenicity to humans.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not an aspiration hazard.

Chronic effects Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity Harmful to aquatic life with long lasting effects.

Persistence and degradability No data is available on the degradability of any ingredients in the mixture.

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)

Diuron (CAS 330-54-1) 2.68

Mobility in soil No data available.

Other adverse effects The product contains volatile organic compounds which have a photochemical ozone creation potential.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Incinerate the material under controlled conditions in an approved incinerator.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

TDG

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information

Canadian regulations This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

Controlled Drugs and Substances Act

Not regulated.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Precursor Control Regulations

Not regulated.

International regulations

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto Protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Not applicable.

16. Other information

Issue date 05-February-2020

Revision date -

Version No. 01

List of abbreviations IATA: International Air Transport Association.
IBC Code: International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk.
IMDG Code: International Maritime Dangerous Goods Code.
MARPOL: International Convention for the Prevention of Pollution from Ships.
TDG: Transportation of Dangerous Goods.

References HSDB® - Hazardous Substances Data Bank

Disclaimer Behr Process Corp cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.